

SECTION 733 TRAFFIC SIGNAL INDICATIONS AND MOUNTING ASSEMBLIES

733-2.01 Fiber Optic Turn Arrow Signal: of the Standard Specifications is revised to read:

Signal Indications

(C) Light Emitting Diode (LED) Module

(1) General

As of December 2001 ADOT requires all new traffic signal heads installed on new, or revamped traffic signal systems to have Light emitting diode (LED) modules for all indications except the Programmed Visibility signal faces. This includes all arrow indications, or combination arrow indications on four section traffic signal heads. Existing signal heads with 8-inch or 12-inch indications that are not replaced, as part of a signal revamp project, shall have all the indications retrofitted with LED indications.

LED traffic signal modules shall meet all the requirements identified in the 1998 Interim LED Purchase Specification of the Institute of Transportation Engineers except as listed below. LED traffic signal modules shall be designed to fit traffic signal housings that meet the specifications established in Section 733. Installation as a retrofit shall require only removal of the existing lens, lamp, lamp socket, and reflector. The module shall be weather tight and fit securely in the housing and shall have wire leads long enough for easy connection to the traffic signal head wire terminal block. The wire shall have crimped-on terminal connectors. The LED signal module shall be a single, self-contained device. The power supply shall be integral to the sealed LED module.

(2) Module Identification

The manufacturer shall label each LED module. The label shall contain all information listed in Section 3.6 of the ITE Interim LED Specification. In addition to the requirements of Section 3.6, the Department shall require that the label contain the date of manufacture, the date of installation (this information will be filled in by the installing technician), and the following statement “ Manufactured in Conformance with the 1998 Interim Purchase Specification of the ITE for LED Vehicle Traffic Signal Modules”.

(3) LED Environmental Requirements

Two ambient operating temperature ranges are being identified. The Department may, on certain projects in high heat desert areas, require the contractor to supply units that are rated to operate in the high temperature range. The contractor and material vendor shall carefully review the project plans and

special provisions for LED temperature range requirements. LED signal modules shall be rated for use in the ambient operating temperature range of -40°C (-40°F) to $+74^{\circ}\text{C}$ (164°F) and /or in the ambient operating temperature range of -40°C (-40°F) to $+81^{\circ}\text{C}$ (178°F). If not indicated on the plans or in the special provisions the LED module shall be rated for the -40°C (-40°F) to $+81^{\circ}\text{C}$ (178°F) temperature range. If not indicated on the plans or in the special provisions, the LED module shall be rated for the -40°C (-40° to $+74^{\circ}\text{C}$ (164°F) temperature range. The manufacturer shall provide independent environmental testing verification that the product has operated successfully in the rated temperature range, or ranges that the manufacturer is proposing to supply.

(4) LED Module Photometric Requirements

The light output of the LED modules supplied by the contractor to meet the requirements of Section 4 of the ITE Interim LED Purchase Specification, the 44-point test identified in paragraph 6.4.2.1 and the single point test identified in paragraph 6.4.2.2.

(5) LED Module Electrical Requirements

The LED module shall use two color-coded copper wires. The wire shall be No. 20 AWG with 30 mil jacketed insulation. The wires shall be a minimum of 36 inches long with crimped-on fork connectors. The wire shall be rated for 600 volt AC. The insulation shall be rated for 105°C (220°F).

(6) LED Dimming

All LED modules purchased, as part of a Department construction project shall not include dimming circuitry.

(7) Failed State Impedance

The Department requires the manufacturer to include the option listed in Section 5.8 of the ITE Interim LED Purchase Specification.

(8) LED Module Compatibility

The Department has adopted the recommendation stated in Technical Note #2 of the Institute of Transportation Engineers 1998 Interim LED Purchase Specification.

Currently the Department uses the following brand and model load switches and conflict monitors:

Load Switches

1. PDC model SSS-83
2. PDC model SSS-87
3. PDC model SSS-88

4. IDC/SSD model 200K
5. IDC/SSD model 200K I/O
6. TSC C/N 82A049
7. TSC C/NSP 4300
8. EDI 510 m

Conflict Monitors

1. Eagle model LT-222
2. Econolite model SSM-12E
3. EDI model NSM-12L
4. EDI model SSM-18LE
5. Solid State Devices model NM(NP)-12L
6. Solid State Devices model Guardian LCD 18P

All LED manufacturers shall insure that LED modules are compatible with Department load switches and conflict monitors. The contractor shall include in the material submittal a list of all control equipment known to be incompatible with the submitted LED module. This shall include equipment not currently listed or used by the Department.